

PERSYST™

THE RAMPAK™
MODULE FOR THE
TEXAS INSTRUMENTS
PROFESSIONAL
COMPUTER

HOW TO INSTALL IT.

PERSYST™

INVENTORY CHECKLIST

Your **PERSYST™ RAMPAK™ Module for the Texas Instruments (TI) Professional Computer™** carton contains the following:

- RAMPAK™ Module (board) with a minimum of 64 Kbytes (KB) of memory
- Expansion Programmable Logic Array (PLA) Integrated Circuit Chip (IC) with two brown identification markings
- Installation Guide
- Limited Warranty (Printed on back of Inventory Checklist)

If any items are missing or damaged, consult your place of purchase for the procedure to follow in order to correct the problem.

Insert this documentation in the *Operating Instructions* (Section 5, "Options") that you received with your Texas Instruments Professional Computer.

©Copyright 1983 Personal Systems Technology, Inc.
Texas Instruments (TI) Professional Computer is a registered trademark of Texas Instruments Incorporated.

LIMITED WARRANTY

PERSYST™, Personal Systems Technology, Inc. warrants this Personal Computer compatible product to be in good working order for a period of one year from the date of purchase from PERSYST™ or an authorized PERSYST™ dealer. Should this product fail to be in good working order at any time during this one year warranty period, PERSYST™ will, at its option, repair or replace this product at no additional charge except as set forth below. Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of PERSYST™. This limited warranty does not include service to repair damage to the product resulting from accident, disaster, misuse, abuse, or non-PERSYST™ modification of the product including product expansion through plug-in additions except as provided by PERSYST™.

Limited Warranty service may be obtained by delivering the product during the one year warranty period to an authorized PERSYST™ Service Center and providing proof of purchase date. If this product is delivered by mail, you agree to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location and to use the original shipping container or equivalent. Contact an authorized PERSYST™ dealer or write to PERSYST™, Personal Systems Technology, Inc., 15801 Rockfield Boulevard, Suite A, Irvine, California 92714 for further information.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE, AND NO WARRANTIES, WHETHER EXPRESSED OR IMPLIED, WILL APPLY AFTER THIS PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON THE LENGTH OF IMPLIED WARRANTY; THEREFORE, THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED ABOVE, YOUR SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. IN NO EVENT, WILL PERSYST™ BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF, OR INABILITY TO USE, SUCH PRODUCT, EVEN IF PERSYST™ OR AN AUTHORIZED PERSYST™ DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. ALSO, PERSYST™ WILL NOT BE LIABLE FOR ANY CLAIM BY ANY OTHER PARTY.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS; THEREFORE, THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS THAT MAY VARY FROM STATE TO STATE.

PERSYST™

**RAMPAK™ MODULE
INSTALLATION GUIDE
FOR THE TEXAS INSTRUMENTS
PROFESSIONAL COMPUTER**

Manual Number 16-00186-00

Information furnished in this guide is believed to be accurate and reliable. However, no responsibility is assumed by PERSYST™ for its use; nor for any infringements of patents or other rights of third parties which may result from its use. PERSYST™ reserves the right to change product specifications at any time without notice.

No part of this document may be reproduced by any means, nor translated, nor transmitted to any magnetic medium without the written consent of PERSYST™.

The following trademarks of PERSYST are used in this guide.

PERSYST
TIME-SPECTRUM
Cliffhanger
VERSAPAK
RAMPAK

TI is a registered trademark of Texas Instruments Incorporated. Texas Instruments (TI) Professional Computer is a registered trademark of Texas Instruments Incorporated.

Copyright© 1983 PERSYST,
Personal Systems Technology, Inc.

First Printed: June 1983

All rights reserved worldwide.
Printed in the U.S.A.

CONTENTS

1.0 INTRODUCTION	TI RPK-1
2.0 PREINSTALLATION INFORMATION	TI RPK-3
2.1 TOOL REQUIREMENTS	TI RPK-3
2.2 REMOVING THE TI SYSTEM UNIT COVER	TI RPK-3
2.3 REMOVING THE RAMPK FROM THE HOST STC MODULE	TI RPK-6
3.0 INSTALLATION INSTRUCTIONS	TI RPK-7
3.1 RAMPK PLA INSTALLATION	TI RPK-7
3.2 RAMPK MODULE INSTALLATION	TI RPK-9
Attaching the RAMPK to the STC Module	TI RPK-9
Installing the STC/RAMPK Module In the Unit	TI RPK-11
3.3 PROBLEMS AFTER INSTALLATION	TI RPK-12

FIGURES

Figure 1	Location of Cover Mounting Screws	TI RPK-4
Figure 2	Freeing the System Unit Cover	TI RPK-4
Figure 3	Removing the System Unit Cover	TI RPK-5
Figure 4	Cutaway of STC Module	TI RPK-8
Figure 5	Reference Locations on the RAMPAK	TI RPK-10
Figure 6	STC Module with RAMPAK Module Attached	TI RPK-11
Figure 7	STC/RAMPAK Module Installed with One Cliffhanger Attached	TI RPK-12

1.0 INTRODUCTION

This guide provides step-by-step instructions for configuring and installing your PERSYST™ RAMPAK™ Module for the Texas Instruments (TI) Professional Computer. The RAMPAK VERSAPAK module is a "snap-on" type module that adds memory to a PERSYST TIME-SPECTRUM™ (STC) Multifunction Module for the Texas Instruments Professional Computer.

The RAMPAK module consists of one printed circuit board that adds 64 to 256 Kbytes (KB) of expansion memory in 64-KB increments to the TIME-SPECTRUM module. (The total memory possible on the TIME-SPECTRUM board with the RAMPAK installed is 448 KB.)

This guide describes the RAMPAK module only. A separate document describes the TIME-SPECTRUM Multifunction Module (STC) for the Texas Instruments Professional Computer.

Section 2.0 of this guide presents preinstallation information such as the tools that you will need and the steps for removing the system unit cover. Section 3.0 explains the installation of the RAMPAK.

If the STC module that you ordered had greater than 192 KB of memory, the RAMPAK module will already be installed on the host STC module. The STC/RAMPAK module can be installed in your unit without any changes to switches or jumpers.

If your STC module already has the RAMPAK module attached, follow the instructions in the *TIME-SPECTRUM MULTIFUNCTION MODULE INSTALLATION GUIDE FOR THE TEXAS INSTRUMENTS PROFESSIONAL COMPUTER* for installing the STC/RAMPAK module in the unit.

NOTE

The STC host module must be FULLY populated with memory (192 KB) before the RAMPAK module is used. If your STC module is not fully populated, you may remove the Random Access Memory (RAM) devices from the RAMPAK to populate the STC module. The RAMPAK memory sockets are then available for future memory expansion.

You can also order PERSYST 64-KB Memory Expansion Kits to populate the STC or RAMPAK modules.

2.0 PREINSTALLATION INFORMATION

2.1 TOOL REQUIREMENTS

The tools listed below are the only tools that you will need to install your RAMPAK module:

- Medium-sized, flat blade screwdriver.
- A ¼" nutdriver or ¼" wrench.
- A pair of small needlenose pliers.

2.2 REMOVING THE TI SYSTEM UNIT COVER

In order to gain access to the expansion slots, the system unit must be disconnected from the other system components, and the unit cover must be removed. The steps listed below explain how to prepare your unit for the RAMPAK installation.

1. Place the system unit switch to OFF position.
2. Place power switches for external equipment to the OFF position (printer, TV/monitor, and so forth).
3. Unplug the system unit and other optional equipment from the wall outlet.
4. Disconnect all cables from the rear panel of the system unit.
5. Remove the keyboard and optional equipment from the system work area.
6. Position the system unit to allow easy access to the rear panel.
7. Remove the cover mounting screws located on the rear panel (extreme upper-left and upper-right corners) using a flat blade screwdriver.

Turn the screws counterclockwise (CCW); once removed, place the screws in a safe place. See Figure 1 for screw location.

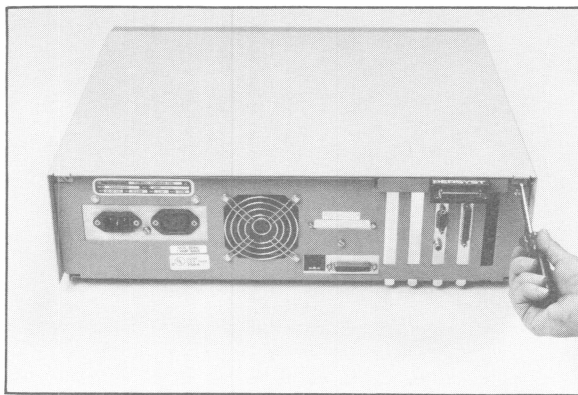


Figure 1. Location of Cover Mounting Screws.

8. Carefully slide the system unit cover backward about 13 mm ($\frac{1}{2}$ ") as shown in Figure 2. The top cover has four extensions that lock into slots on the base unit. These extensions must be moved back and out of the slots before the cover can be lifted.

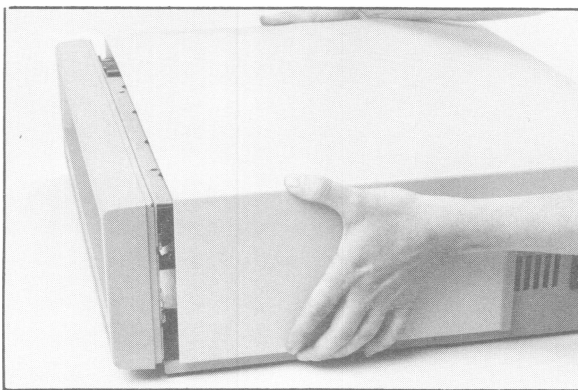


Figure 2. Freeing the System Unit Cover.

9. Lift the system unit cover away from the system unit. See Figure 3. Set the cover aside in a safe place.

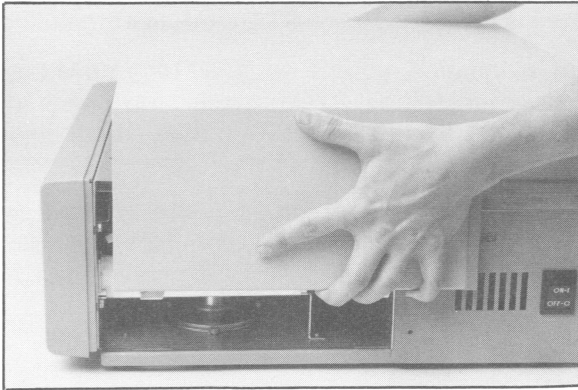


Figure 3. Removing the System Unit Cover.

NOTE

If the host STC module is installed in your system, you must remove it in order to install the RAMPK.

If a second serial asynchronous communications channel is installed on the host STC module, a Cliffhanger assembly will be attached to the rear panel of the system unit bringing the cable out from the board. In that case, disconnect the connector at P5 from the board by walking the connector up evenly from the posts. If you pry the connector up at one end, the pins will bend. Move the cable out of the way.

To remove the host STC module, remove the screw that anchors the module to the rear panel of the system unit. Once the rear panel of the module is free, lift under the center bottom of the board to remove the two edge connectors from the motherboard connector.

2.3 REMOVING THE RAMPAK FROM THE HOST STC MODULE

If you ordered the STC module with greater than 192 KB, the RAMPAK module is attached to the STC module at the factory.

For purposes of installation, you do not need to remove the RAMPAK module from the host STC module. However, if in the future you need to remove the RAMPAK module, the following paragraph describes how to do so.

To remove the RAMPAK module from the host STC module, squeeze each side of the plastic post connection while lifting the top edge of the RAMPAK. Free each post connection on the RAMPAK top until the module is removable.

3.0 INSTALLATION INSTRUCTIONS

The following subsections list installation instructions for your RAMPAK module. First, the Programmable Logic Array (PLA) device that was supplied with your RAMPAK must be inserted in the blank socket on the host STC module at Z46.

NOTE

The PLA device is taped to the top side of your RAMPAK module.

After the PLA is installed, the RAMPAK module must be anchored to the host STC module and the STC/RAMPAK module placed in the unit.

3.1 RAMPAK PLA INSTALLATION

The PLA supplied with your RAMPAK module must be placed on the host STC module at location Z46. See Figure 4, which is a cutaway representation of the STC module showing reference locations; location Z46 is shaded on that figure. Follow the steps below in making this replacement.

1. Check the PLA supplied with your RAMPAK to determine if any of the leads are bent. If so, gently straighten the bent leads.

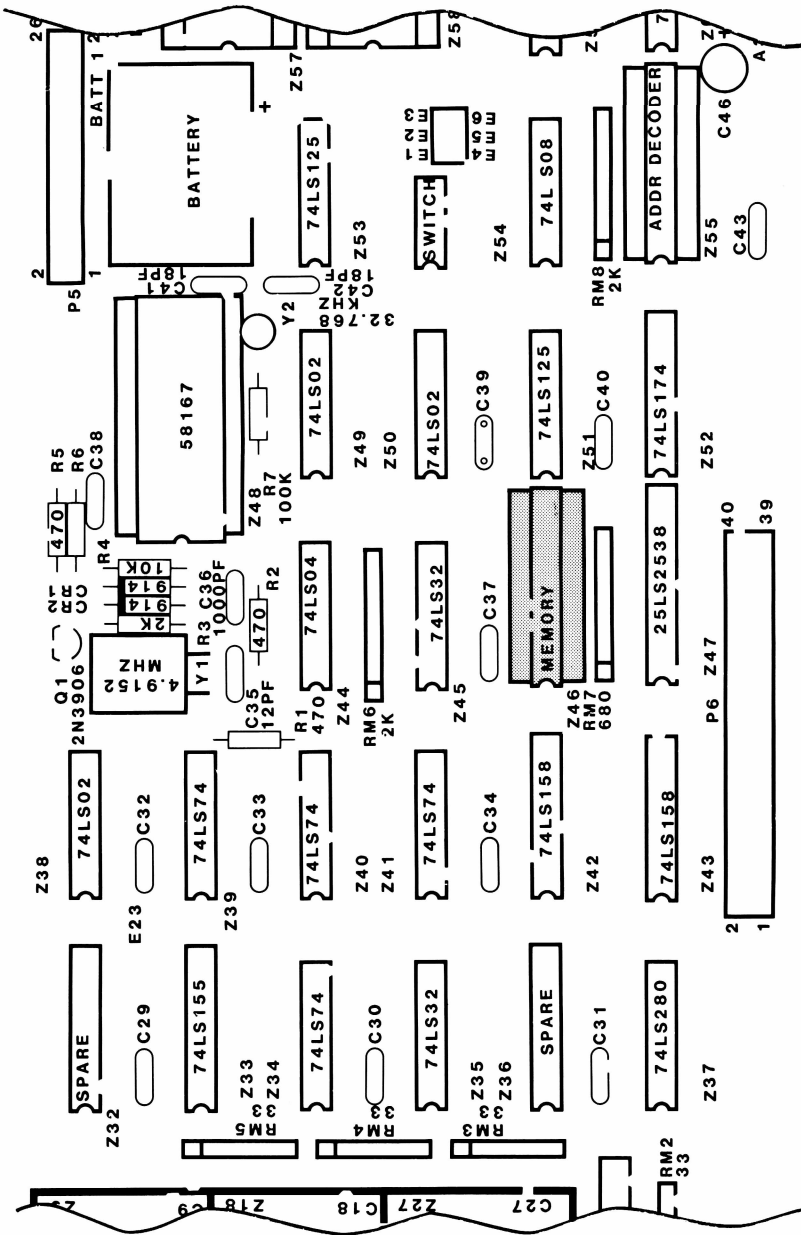


Figure 4. Cutaway of STC Module.

2. Holding the STC module so that the "Z-callouts" on the board read left-to-right, insert the PLA (this device has two brown identification dots on the top) in the socket at Z46. Make sure that the lead-1 end of the device is in the lower left-hand corner. That is, the notch, stripe, or other identification of the lead-1 end should be toward the memory portion of the module. Holding the device so that the printing is readable puts lead-1 in the lower left-hand corner.

To insert the device, align the leads over the sockets and gently push down until the lead tips are directed into the sockets. Once aligned and started, firmly press down on the device to completely seat it in the socket.

3.2 RAMPAK MODULE INSTALLATION

The following steps explain how to install the RAMPAK module on the host STC module and how to install the STC/RAMPAK module in the system unit.

Attaching the RAMPAK to the STC Module

1. Plug the RAMPAK module into the STC module so that the 40-pin connector (P2) on the RAMPAK module mates with the 40-pin connector (P6) on the STC module. (See Figures 4 and 5 for the connector locations.) Match pin 1 on each of the 40-pin connectors.

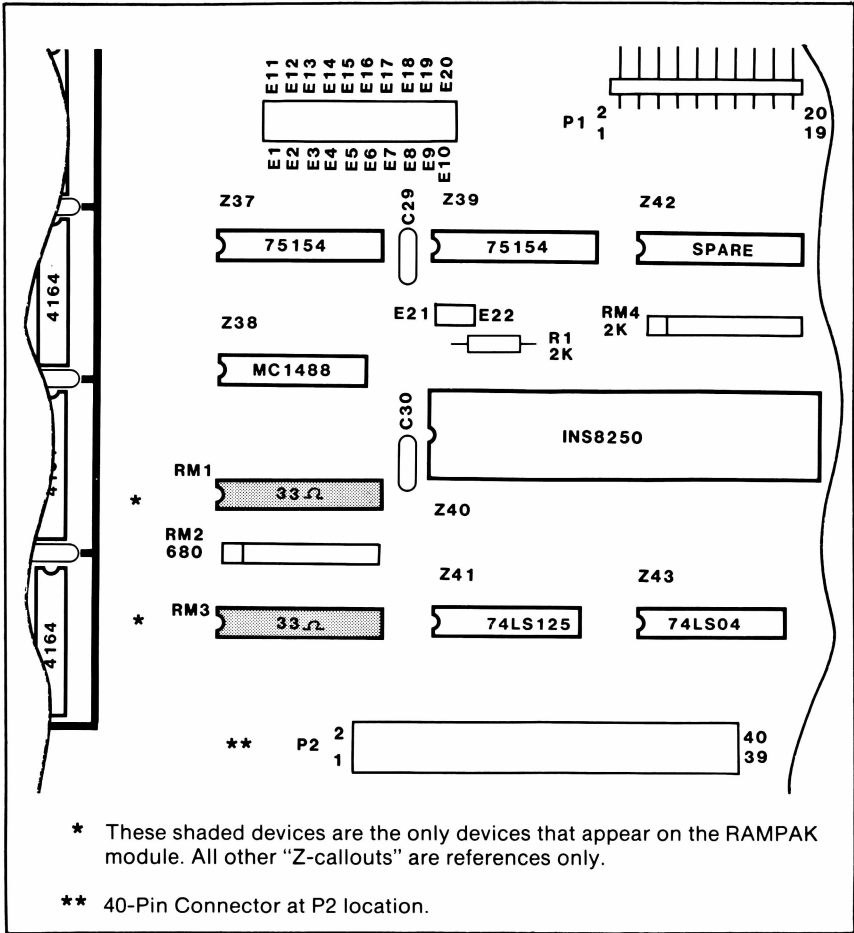


Figure 5. Reference Locations on the RAMPAK.

- Anchor the RAMPAK module to the STC module with the five plastic anchors provided on the RAMPAK module. To anchor the modules together, press the plastic anchors through the matching holes on the host STC module. See Figure 6, which shows the RAMPAK module attached to the STC module.

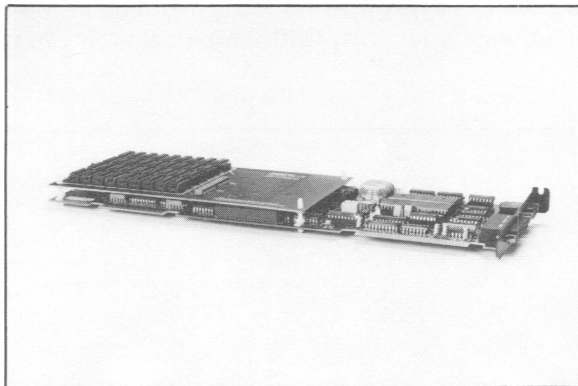


Figure 6. STC Module with RAMPAK Module Attached.

Installing the STC/RAMPAK Module in the Unit

1. Install your STC/RAMPAK module based on the installation procedure in the *TIME-SPECTRUM MULTIFUNCTION MODULE INSTALLATION GUIDE FOR THE TEXAS INSTRUMENTS PROFESSIONAL COMPUTER*, Section 3.2.
2. If your STC module has the second serial asynchronous communications channel installed, connect the connector on the Cliffhanger cable to the board and connect the Cliffhanger assembly to the rear panel of the unit as shown in the *TIME-SPECTRUM MULTIFUNCTION MODULE INSTALLATION GUIDE FOR THE TEXAS INSTRUMENTS PROFESSIONAL COMPUTER* in Section 3.2, Figure 8.

Figure 7 shows the STC/RAMPAK module installed in the system unit with the (second serial port) Cliffhanger assembly in place.

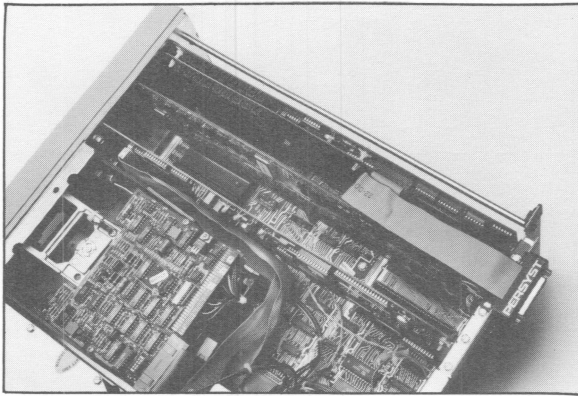


Figure 7. STC/RAMPAK Module Installed with One Cliffhanger Attached.

3.3 PROBLEMS AFTER INSTALLATION

The installation of your STC/RAMPAK module is now complete, and your system should operate normally. The amount of time required for the system to come up will probably be longer than you expect. That is, because the system now contains more memory than before, the time required for the automatic memory diagnostics to complete is longer. The more memory you add; the longer the delay. Therefore, if you experience a "seemingly" long delay when you power on the system, remember that the diagnostics must run.

When the STC and RAMPAK are both fully populated (448 KB) giving the TI system a total memory of 512 KB, an error message may appear when booting the machine. This SYSTEM ERROR 0027 error message is generated by the TI system Read-Only Memory (ROM) diagnostics and does not affect the operation of memory.

If, however, you experience a problem immediately after the installation of the STC module, check the following potential causes of the problem by answering these questions:

- Are any connections to other boards loose?
- Are the cable connections made properly?
Are these connections loose?
- Is the new PLA seated completely?
- Is the RAMPAK module attached securely to the host STC module? Is the large connector that mates the host STC module and the RAMPAK module securely seated?
- Is the power cord loose in the wall socket or at the rear connection to the TI System unit?
- Are the external equipment connections made properly and is the equipment powered on?

If your answers to the above questions are the appropriate ones and the problem remains, go back to the beginning of the installation procedure, follow the instructions, and remove the STC/RAMPAK module. If your system originally had the host STC module installed, restore your system to that configuration. In effect, return your system to its initial state, whether that state was with or without the host STC module.

If your system did NOT originally have the host STC module installed, follow the instructions for installation of the STC module in the *TIME-SPECTRUM MULTIFUNCTION MODULE INSTALLATION GUIDE FOR THE TEXAS INSTRUMENTS PROFESSIONAL COMPUTER* that you received. Try the system with only the STC module in place. If the system operates normally, possibly the RAMPAK module is defective.

If the system does not operate normally, possibly the STC module that you received is defective. Refer to the Limited Warranty at the beginning of this document for the procedure to follow if either the STC or RAMPAK module appears defective.

If your system does not operate normally with only the STC module installed, return your system to its original configuration without either the STC module or the RAMPAK. If your system does not operate normally in that configuration, the problem may be in your system.

Product Comment Form

**RAMPAK MODULE
INSTALLATION GUIDE
FOR THE TEXAS INSTRUMENTS
PROFESSIONAL COMPUTER**

16-00186-00

Your comments about this document assist us in improving our products/documents. PERSYST reserves the right to use and distribute any of the information you supply in any way it believes appropriate without incurring any obligation whatsoever.

If you wish a response to your comments, fill in your name and address below:

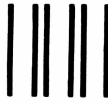
Name _____

Street _____

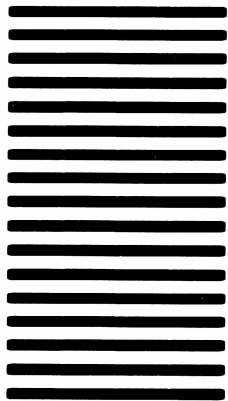
City _____ State _____

Zip _____ Phone _____

Your Comments:



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 7351 IRVINE, CALIFORNIA

POSTAGE WILL BE PAID BY THE ADDRESSEE

PERSYST™ PRODUCTS
Personal Systems Technology, Inc.
15801 ROCKFIELD
IRVINE, CA 92714



Fold here



Tape

Please do not staple

Tape